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8.2 Contributors

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This EA, along with the more detailed primary operations description and results of the refined environmental analyses developed for X-33 EA-II will be used for formal consultation with appropriate regulatory authorities. Consultations and official letters of correspondence denoting their opinions will be appended to the Draft X-33 EA-II or EIS prior to public comment.

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APPENDIX A

Summary of the X-Plane Program

Table A-1. Summary of X-Plane Program

Model	Manufacturer	No. of Vehicles Built	Years of Operation	No. of Flights	Primary Testing Facility	Research Goals	Program Achievements	No. of Major Accidents	Causes of Accidents	No. of Fatalities	Civilian Involvement
X-1	Bell Aircraft	3	1946-51	157	Edwards AFB	Investigate flight characteristics at greater than sonic velocities. Structural, physiological phenomena within transonic speed envelope	First Mach 1+ flight; Maximum altitude of 71,902 ft	1	Defueling Explosion	0	None
X-1A	Bell Aircraft	1	1953-55	25	Edwards AFB	Continue X-1 goals at higher speeds and altitudes	Obtained speed of Mach 2.44; Maximum altitude of 90,440	1	Explosion during captive flight; vehicle jettisoned	0	None
X-1B	Bell Aircraft	1	1954-58	27	Edwards AFB	Exploratory aerodynamic heating tests; experimental reaction control system	First reaction controlled flight	0	Not applicable	Not applicable	Not applicable
X-1D	Bell Aircraft	1	1951	1	Edwards AFB	Continue X-1 goals at higher speeds and altitudes	No major milestones	1	Explosion during captive flight; vehicle jettisoned	0	None
X-1E	Bell Aircraft, Stanley Aircraft (wings)	1	1955-58	26	Edwards AFB	High-speed wing performance	Mach 2.24, Altitude 73,458 ft; first flight with ventral fins	0	Not applicable	Not applicable	Not applicable
X-2	Bell Aircraft	2	1952-56	20	Edwards AFB	Swept-wing performance; higher speeds and altitude than X-1	New altitude record of 126,200 ft; new speed record of Mach 2.87	2	Gasket explosion destroys first X-2; second aircraft lost to inertial coupling	3	None
X-3	Douglas Aircraft	1	1954-56	20	Edwards AFB	High speed aerodynamic phenomenon; titanium construction; takeoff, land under its own power	Led to understanding of inertia coupling	0	Not applicable	Not applicable	Not applicable
X-4	Northrop Aircraft	2	1950-53	82	Edwards AFB	Test tailless, semi-tailless configuration at transonic speeds	Showed tailless craft not suited for transonic flight	0	Not applicable	Not applicable	Not applicable
X-5	Bell Aircraft	2	1952-55	133	Edwards AFB	Investigate aerodynamics of variable-sweep-wing design	Successful sweep-wing operation	0	Not applicable	Not applicable	Not applicable

Table A-1. Summary of X-Plane Program

Model	Manufacturer	No. of Vehicles Built	Years of Operation	No. of Flights	Primary Testing Facility	Research Goals	Program Achievements	No. of Major Accidents	Causes of Accidents	No. of Fatalities	Civilian Involvement
X-6	Convair Division, General Dynamics	1 shield-test aircraft (modified B-36H)	1955-57	47	Convair Testing Facility	Test feasibility of nuclear propulsion	Program terminated before prototypes constructed	0	Not applicable	Not applicable	Not applicable
X-7A, X-7A-3, X-7B, X-Q5 (unmanned)	Lockheed Missiles	61	1951-60	130	New Mexico	Test viability of ramjet engines for anti-aircraft missiles; modified to testing of powerplants	Obtained Mach 4.31, first air-breathing full-scale research aircraft designed as Mach 3 testbed	0	Not applicable	Not applicable	Not applicable
X-8A, X-8B, X-8C, X-8D Aerobees (unmanned)	Aerojet Engineering	108 (X-8 designation) 800+ (Aerobees)	1947-56	Unknown	White Sands, Holloman AFB	Upper air research, parachute recovery system	Peak altitude of 121 miles	0	Not applicable	Not applicable	Not applicable
X-9 (unmanned)	Bell Aircraft	31	1949-53	28	Holloman AFB	Test air-to-surface missiles; guidance systems, etc.	First chemical warhead test vehicle to test supersonic clusterable dispersion	9 unsuccessful flights	Servo system failures	0	Not applicable
X-10 (unmanned)	North American Aviation	13	1955-59	15	Edwards AFB	Testbed for cruise missile components	Established technology base for remote control; first Mach 2-capable target drone	3 unsuccessful flights	Communications disruption; miswiring; autopilot malfunction	0	Not applicable
X-11 (unmanned)	Convair Astronautics Division	8	1956-58	8	Cape Canaveral	Provide flight data for Atlas missile	First ICBM prototypes	0	Not applicable	Not applicable	Not applicable
X-12 (unmanned)	Convair Astronautics Division	5	1958	5	Cape Canaveral	Test 1-propulsion staging guidance system, nose reentry configuration	First intercontinental range mission of 6,325 miles	0	Not applicable	Not applicable	Not applicable
X-13	Ryan Aeronautical Company	2	1955-57	Unknown	Edwards AFB	Test pure-jet vertical takeoff and landing	First successful VTOL flight on jet thrust alone	0	Not applicable	Not applicable	Not applicable
X-14, X-14A, X-14B	Bell Aircraft	1	1957-81	Unknown	Moffet Field	Test VTOL technology	First VTOL aircraft using jet thrust diverter system for vertical lift	0	Not applicable	Not applicable	Not applicable